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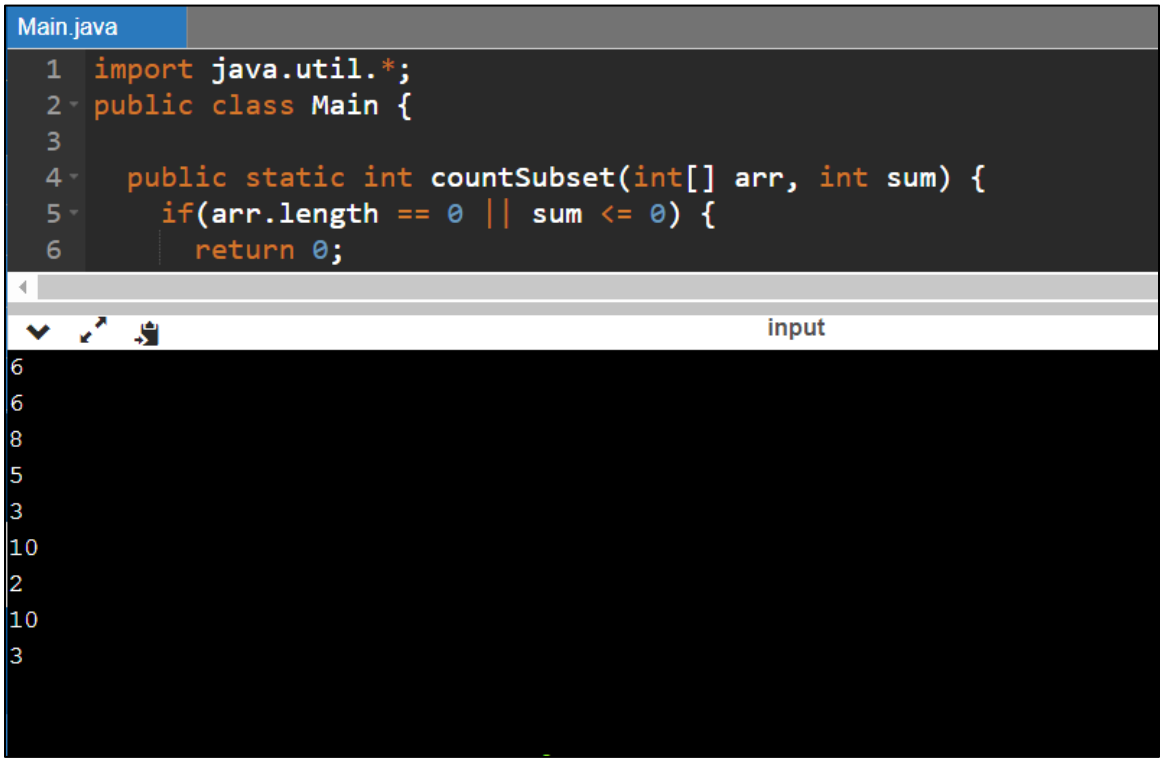
Lab Assignment 2

Question 1

Program to count subsets with sum equals to the given number using Recursion




```
import java.util.*;

public class Main {


  public static int countSubset(int[] arr, int sum) {
```

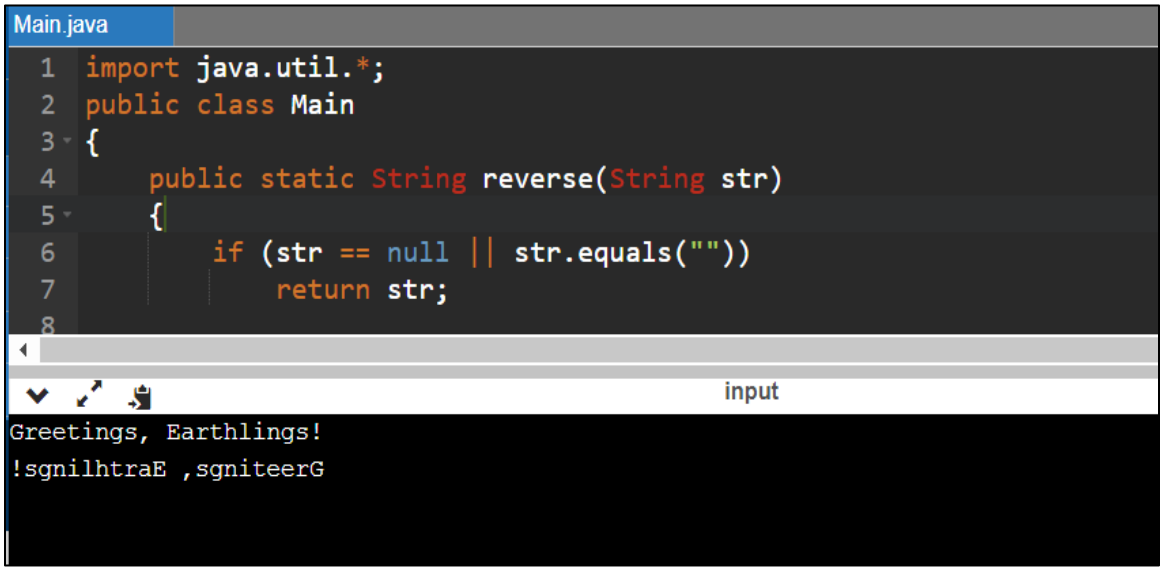
```
if(arr.length == 0 || sum <= 0) {
  return 0;
}

int n = arr.length;

int[][] count = new int[n][sum + 1];

for(int i = 0; i < n; i++) {
  count[i][0] = 1;
}

for(int j = 0; j <= sum; j++) {
  if(arr[0] == j) {
    count[0][j] = 1;
  }
}

for(int i = 1; i < n; i++) {
```

```
    for(int j = 1; j <= sum; j++) {

      int p = 0;

      int q = 0;

      if(arr[i] <= j) {

        p = count[i - 1][j - arr[i]];

      }

      q = count[i - 1][j];

      count[i][j] = p + q;

    }

  }

  return count[n - 1][sum];

}

public static void main(String[] args) {
```

```
        int n;
        Scanner s = new Scanner(System.in);
        n = s.nextInt();
        int arr[] = new int[n];
        for(int i = 0; i < n; i++)
        {
            arr[i] = s.nextInt();
        }
    int number;
    number = s.nextInt();
    System.out.println(countSubset(arr, number));

  }

}
```

Question 2

Program to Reverse a String using Recursion



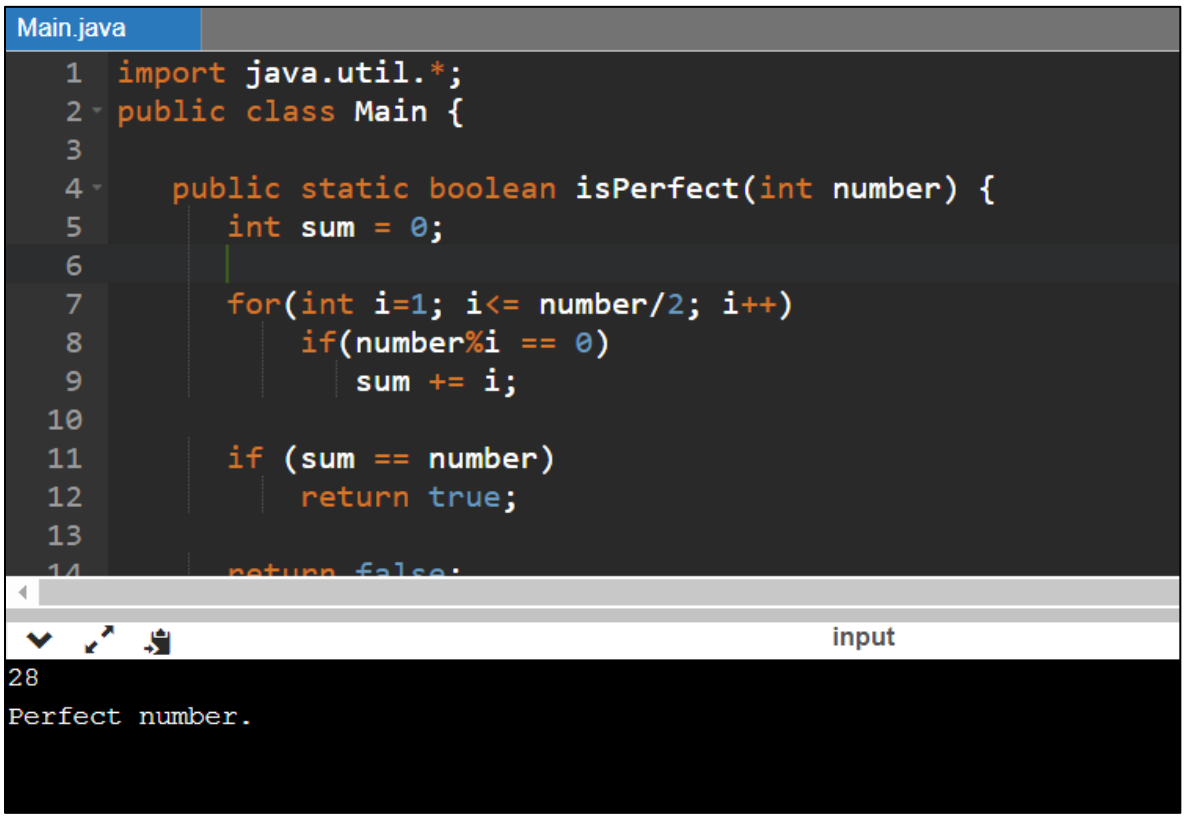

```
import java.util.*;

public class Main

{

    public static String reverse(String str)

    {

        if (str == null || str.equals(""))

            return str;
```

```
    int n = str.length();



    char[] temp = new char[n];



    for (int i = 0; i < n; i++)
        temp[n - i - 1] = str.charAt(i);

    return String.copyValueOf(temp);
}
public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    String str = sc.nextLine();
    str = reverse(str);
    System.out.println(str);
```

```
    }
}
```

Question 3

Program for checking if a number is perfect number or not




```
import java.util.*;

public class Main {


  public static boolean isPerfect(int number) {

    int sum = 0;
```

```
    for(int i=1; i<= number/2; i++)
        if(number%i == 0)
            sum += i;

    if (sum == number)
        return true;
    else
     return false;
}
public static void main(String[] args) {
    int number = 0;
    boolean result = false;

    Scanner sc = new Scanner(System.in);

    number = sc.nextInt();


    result = isPerfect(number);
```

```
        if(result)
            System.out.println("Perfect number.");
        else
            System.out.println("Not a Perfect number.");
    }
}
```

Salma